

REMARKS

Claims 1-5, 7, 10-16, 33, 34, 37-43 and 45-64 are pending in the above-captioned patent application after this amendment. Claims 1-45 have been rejected. Claims 4, 21 and 22 have been objected to because of certain informalities. The drawings have been objected to as containing certain informalities.

The Applicants respectfully disagree with the rejection of claims 1-45. However, the Applicants have amended claims 1, 3, 4, 7, 10, 13, 33, 37, 38, 43 and 45, canceled claims 6, 8, 9, 17-32, 35, 36 and 44 without prejudice, and added new claims 46-64 for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office pursuant to 65 Fed. Reg. 54603 (September 8, 2000), and/or to clarify what the Applicants regard as the present invention. Claims 3, 4, 7, 10, 37, 38 and 45 have been amended solely to correct certain informalities and not to overcome any substantive rejection.

Support for the amendments to claims 1, 3, 4, 7, 10, 13, 33, 37, 38, 43 and 45 can be found throughout the originally filed application, including the originally filed claims, the drawings and the specification. More specifically, support for the amendments to claims 1, 3, 4, 7, 10, 13, 33, 37, 38, 43 and 45 can be found at least in the specification at page 9, lines 10-28, at page 11, lines 11-22, at page 11, line 32 through page 12, line 13, at page 14, lines 14-27, in Figures 1A, 2A and 3, and in previously filed claims 6, 8, 9, 35, 36 and 44.

Support for new claims 46-64 can be found throughout the originally filed application, including the originally filed claims, the drawings and the specification. More specifically, support for new claims 46-64 can be found at least in the specification at page 6, line 15 through page 8, line 24, at page 9, lines 10-28, at page 11, lines 11-22, at page 12, lines 7-18, in Figures 1A, 1B, 2A and 3, and in the previously filed claims.

No new matter is believed to have been added by this amendment.

Reconsideration of the pending application is respectfully requested in view of the above-recited amendments and the arguments set forth below.

Objections to the Drawings

The Examiner has objected to the drawings on the basis of certain informalities. More particularly, the drawings are objected to "as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 101 (intermediate chamber)." Further, the drawings are also objected under 37 CFR 1.83(a) because the "drawings must show every feature of the invention specified in the claims. Therefore, the intermediate chamber (claims 8-10, 24 and 25) must be shown or the feature(s) canceled from the claim(s)."

Replacement formal drawings in response to the Examiner's objection are submitted herewith. In Figure 2A, reference numeral "101" has been clarified to illustrate the location of the intermediate chamber.

Claim Objections

Claims 4, 21 and 22 have been objected to because of certain informalities. In particular, claim 4 has been objected to because it depends from itself. Further, claims 21 and 22 have been objected to because they "include the recitation of 'the piston connector' without a proper antecedent basis."

Claim 4 has been amended with this amendment in accordance with the suggestion of the Examiner to show its proper dependence from claim 3. Accordingly, the Applicants respectfully submit that the objection to claim 4 has been overcome. Further, claims 21 and 22 have been cancelled with this amendment. Therefore, the Applicants respectfully submit that the objection to claims 21 and 22 is moot.

Rejections Under 35 U.S.C. § 102(b)

Claims 17, 18, 31, and 32 are rejected under 35 U.S.C. § 102(b) as being anticipated by Hayashi (U.S. Patent No. 6,036,162). The Examiner contends that Hayashi discloses "an exposure apparatus for producing semiconductor devices (col. 1 lines 21-35) that includes a vibration damping function." In addition, the Examiner asserts that "(t)hese claims are viewed as product-by-process claims and thus the device or wafer claimed must be shown to be structurally different than a wafer or device produced by the prior art. Since Applicant has not distinguished any such structural differences, Hayashi anticipates

the devices or wafers of these claims.”

Claims 17, 18, 31 and 32 have been cancelled with this amendment. Therefore, the Applicants respectfully submit that the rejection of claims 17, 18, 31 and 32 under 35 §102(b) is moot.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-16, 19-30, and 33-45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ward et al. (U.S. Patent No. 5,623,861) in view of Hayashi. Claims 1, 3, 4, 7, 10, 13, 33, 38, 43 and 45 have been amended with this amendment. The Applicants respectfully submit that claims 1, 3, 4, 7, 10, 13, 33, 38, 43 and 45 as amended are patentable over the cited combination of references. Further, claims 6, 8, 9, 19-30, 35, 36 and 44 have been canceled with this amendment. Accordingly, the Applicants respectfully submit that the rejection of claims 6, 8, 9, 19-30, 35, 36 and 44 under 35 U.S.C. §103(a) is moot.

In particular, the Examiner asserts that Ward et al. in Figures 1-3 teaches “a pneumatic cylinder system including a first subsystem including a cylinder (chamber 32) and a first piston (piston head 14), and a second subsystem including a second cylinder (chamber 40) and a second piston (piston head 16). The fist (sic) and second pistons moving along a first and second axis that are substantially coaxial.” Additionally, the Examiner provides that “(t)he system of Ward further includes a piston connector (piston rod 20) and an axial bore 44 for allowing the first and second chambers to be in fluid communication with each other. Ward also shows the pneumatic cylinder system including an intermediate chamber (chamber 34) and a bleed hole 50 for allowing the pressure inside of the intermediate chamber to be adjusted.” Further, the Examiner asserts that “FIG. 6 of Ward shows an alternative pneumatic cylinder further including a third subassembly, coaxial with the first and second subsystems, with a third cylinder (chamber 40') and a third piston (piston head 16'), and a piston connector (piston rods 20 and 20') for connecting the first, second and third pistons.”

The Examiner acknowledges that “(t)he pneumatic cylinder system of Ward is not disclosed as a fluid mount included in an isolation system installed between an apparatus frame and a mounting base of an apparatus frame. However, FIG. 12 of Hayashi shows

an exposure apparatus including pneumatic cylinder systems (air pressure type actuators 310A-310D) as part of an isolation system disposed between an apparatus frame and a mounting frame (floor 301 via mounting plates 314A and 314B).” Finally, the Examiner concludes that “it would have been obvious to dispose the pneumatic cylinder system of Ward as a fluid mount as part of an isolation system between an apparatus frame of an exposure apparatus, as taught by Hayashi, in order to suppress vibrations in the exposure apparatus (see col. 4 lines 62-67 of Hayashi).”

The Applicants provide that Ward et al. is directed to a pneumatic cylinder including a cylinder body 10 having a piston assembly 12 therein, the piston assembly 12 having two pistons heads 14, 16 and two piston rods 18, 20. The cylinder body 10 has an intermediate wall 30 which defines first and second pressure chambers 32, 34 between piston heads 14, 16. A third chamber 40 is defined between piston head 16 and an end of the cylinder body 10. A port 42 is connected to a source of pressurized gas to provide pressurized gas to the third chamber 40 to drive the piston in its working stroke, with the third chamber 40 communicating with the first pressure chamber 32 via an axial bore 44. A return port 48 is provided to supply compressed air to the second pressure chamber 34 and the piston head 16 to drive the piston assembly 12 in its return stroke. (Ward et al. column 3, line 51 through column 4, line 12, and Figure 1).

During the working stroke, the first and third chambers 32, 40 are pressurized and the return port 48 is exhausted to the atmosphere. The speed of movement is restricted by a bleed hole 50 that provides restricted venting of the second pressure chamber 34, and any leakage past a venting valve 54, 56. On the return stroke, an air directional valve exhausts the first and third chambers 32, 40 to atmosphere while supplying pressurized air to the second chamber 34. (Ward et al. column 4, lines 35-67, and Figures 2 and 3).

In one embodiment, Ward et al. can also include an additional piston 16' on an extended piston rod 20' and bounding chambers 34', 40'. (Ward et al. column 6, lines 4-7, and Figure 6).

However, Ward et al. does not disclose or suggest a control system that is connected to the intermediate chamber, i.e. the second pressure chamber 34, and that actively adjusts a pressure inside the intermediate chamber to be below the lower of a pressure inside the first chamber (or subsystem) and a pressure inside the second

chamber (or subsystem). The pressurized gas in the second pressure chamber 34 is merely exhausted and/or vented to the atmosphere during the working stroke, which does not actively adjust the pressure inside the chamber. Additionally, Ward et al. does not disclose a cylinder connector that holds the first and second cylinders and lines them up along a first axis. Further, Ward et al. does not disclose or suggest a piston connector that couples the first piston and the second piston, the piston connector extending around the second cylinder. The "piston connector" as disclosed by Ward et al. extends from one piston head 16 to the other piston head 14 within the cylinder body 10.

Still further, Ward et al. does not disclose or suggest a first and second subsystem each having a cylinder, a piston and a seal, wherein the seal is fixedly secured to the cylinder and the piston. If Ward et al. had such a seal in each subsystem, then the piston heads within the pneumatic cylinder of Ward et al. would not be able to move through the full stroke as they were designed and intended. Yet further, Ward et al. does not disclose or suggest actively and concurrently adjusting a pressure inside each of the chambers.

Moreover, the Applicants assert that the only relevant teaching of Hayashi is the use of vibration isolation mounts 103A to 103C with a projection exposure apparatus. (Hayashi column 9, lines 41-46, and Figure 1).

In contrast to the cited references, amended claim 1 of the present invention requires "(a) fluid mount comprising: a first subsystem including a first cylinder and a first piston, the first piston moving within the first cylinder and cooperating with the first cylinder to define a first chamber; a second subsystem including a second cylinder and a second piston, the second piston moving within the second cylinder and cooperating with the second cylinder to define a second chamber; an intermediate chamber positioned between the first chamber and the second chamber; and a control system that is connected to the intermediate chamber, the control system actively adjusting a pressure inside the intermediate chamber to be below the lower one of a pressure inside the first chamber and a pressure inside the second chamber."

These features are not taught or suggested by the cited combination of references. Accordingly, amended claim 1 is believed to be patentable under 35 U.S.C. §103(a). Because claims 2-5, 7, 10-16 and new claim 47 depend either directly or indirectly upon amended claim 1, they are also believed to be patentable over the cited combination of

references.

Further, in contrast to the cited references, amended claim 33 of the present invention requires “(a) method for making a fluid mount ... comprising the steps of: providing a first subsystem including a first cylinder and a first piston, the first piston moving within the first cylinder; providing a second subsystem including a second cylinder and a second piston, the second piston moving within the second cylinder; coupling the first piston to the second piston with a piston connector so that the first piston and the second piston move substantially concurrently; positioning the second subsystem directly on top of the first subsystem; providing an intermediate chamber between the first subsystem and the second subsystem; and providing a control system that is connected to the intermediate chamber and actively adjusts a pressure inside the intermediate chamber to be below the lower one of a pressure inside the first subsystem and a pressure inside the second subsystem.”

These features are not taught or suggested by the cited combination of references. Accordingly, amended claim 33 is believed to be patentable under 35 U.S.C. §103(a). Because claims 34, 37-42 and new claim 48 depend either directly or indirectly upon amended claim 33, they are also believed to be patentable over the cited combination of references.

Additionally, in contrast to the cited references, amended claim 43 of the present invention requires “(a) method for supporting a load comprising the steps of: providing a first subsystem including a first cylinder and a first piston, the first piston moving within the first cylinder along a first axis; providing a second subsystem including a second cylinder and a second piston, the second piston moving within the second cylinder along a second axis that is substantially coaxial with the first axis; providing an intermediate chamber between the first subsystem and the second subsystem; controlling the pressure of at least one of the subsystems and actively adjusting a pressure inside the intermediate chamber to be below the lower one of a pressure inside the first subsystem and a pressure inside the second subsystem; connecting the first piston with the load; and connecting the second piston with the load.”

These features are not taught or suggested by the cited combination of references. Accordingly, amended claim 43 is believed to be patentable under 35 U.S.C. §103(a).

Because claim 45 and new claim 46 depend directly upon amended claim 43, they are also believed to be patentable over the cited combination of references.

New Claims

New claims 49-64 have also been added with this amendment. New claims 49-64 are of a slightly different scope than the previously pending claims. However, new claims 49-64 are believed to be patentable in view of the cited references.

In contrast to the cited references, new independent claim 49 of the present invention requires "(a) fluid mount comprising: a first subsystem including a first cylinder and a first piston, the first piston moving within the first cylinder along a first axis; a second subsystem including a second cylinder and a second piston, the second piston moving within the second cylinder along a second axis that is substantially coaxial with the first axis; a cylinder connector that holds the first cylinder and the second cylinder, the cylinder connector lining up the first cylinder and the second cylinder along the first axis; and a piston connector that couples the first piston and the second piston, the piston connector extending around the second cylinder."

These features are not taught or suggested by the cited combination of references. Accordingly, new claim 49 is believed to be patentable. Because claims 50-52 depend either directly or indirectly upon new claim 49, they are likewise considered to be patentable.

Additionally, in contrast to the cited references, new independent claim 53 requires "(a) fluid mount comprising: a first subsystem including a first cylinder, a first piston and a first seal, the first piston moving within the first cylinder, the first seal being fixedly secured to the first cylinder and the first piston; and a second subsystem including a second cylinder, a second piston and a second seal, the second piston moving within the second cylinder, the second seal being fixedly secured to the second cylinder and the second piston, wherein the second piston moves concurrently with the first piston."

These features are not taught or suggested by the cited combination of references. Accordingly, new claim 53 is believed to be patentable. Because claims 54-60 depend either directly or indirectly upon new claim 53, they are likewise considered to be patentable.

Further, in contrast to the cited references, new independent claim 61 requires "(a) fluid mount comprising: a first subsystem including a first cylinder and a first piston, the first piston moving within the first cylinder and cooperating with the first cylinder to define a first chamber; a second subsystem including a second cylinder and a second piston, the second piston moving within the second cylinder and cooperating with the second cylinder to define a second chamber; an intermediate chamber positioned between the first chamber and the second chamber; and a control system that actively and concurrently adjusts a pressure inside each of the first chamber, the second chamber and the intermediate chamber."

These features are not taught or suggested by the cited combination of references. Accordingly, new claim 61 is believed to be patentable. Because claims 62-64 depend either directly or indirectly upon new claim 61, they are likewise considered to be patentable.

Remaining References

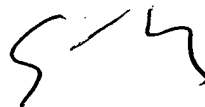
The references cited by the Examiner, but not relied on for the rejection of claims, have been noted. The remaining references are no more pertinent than the applied references, therefore, a detailed discussion of these remaining references is deemed unnecessary for a full and complete response to the Office Action.

CONCLUSION

In conclusion, the Applicants respectfully assert that claims 1-5, 7, 10-16, 33, 34, 37-43 and 45-64 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

Dated this the 19th day of November, 2003.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'S G Roeder', written in a cursive style.

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